I Claim

1. **A Device** for conveying closures (D) made from metallic sheet in an essentially vertical direction from a collecting point (1) to a release point (6),

wherein the closures are selected to be in correct position during conveying in order to release at the release point (6) only same-lying closures in a row of closures following one another closely;

having a conveyer belt (10) for the transport (v1, v2) of the closures and having a sensor and discharge device (17, 16, 19, 18; 3) for detecting wrong-position closures and for lateral discharge (q1, q2) of individual wrong-position closures;

characterised in that

in the course of the conveyer belt (10) **upstream** of the sensor and discharge device (17, 16, 19, 18; 3), a bar (15) is arranged above the conveyer belt, which terminates after the sensor and discharge device (17,16,19,18;3) in order to

- supply separately more than one row (R1, R2) of closures next to one another to the sensor and discharge device (17,16,19,18;3);
- to discharge at the sensor and discharge device (17,16,19,18;3) wrong-position closures from several rows (R_1, R_2);
- after the sensor and discharge device (17,16,19,18;3) to guide together the several rows (R1, R2) into the row of closures following one another closely in the course of the conveyer belt (10).

2. Device according to claim 1, wherein the conveyer belt (10) is a rotating continuous conveyer belt.

3. Device according to claim 1, wherein the bar is arranged above a surface of the conveyer belt suitable for transport of the closures, in particular at a fixed height with respect to the surface of the conveyer belt.

4. Device according to claim 1, wherein the discharge device of the sensor and discharge device (3) has at least two discharge heads (16, 18), which are aligned in directions pointing opposite one another, for the discharge of wrong-position closures at both sides of the conveyer belt (10).

5. Device according to claim 1 or 4, wherein the sensor device and the discharge device (3) are arranged (a) at a distance in longitudinal direction of the conveyer belt.

6. Device according to claim 1, wherein the sensors of the sensor and discharge device (17, 16, 19, 18; 3) are height-adjustable with respect to the bar (15) or with respect to the conveyer belt (10).

7. Device according to claim 1, wherein an elongated magnetic device (50; 58, 59), which extends as far as the sensor and discharge device (17, 16, 19, 18; 3) and terminates in the region thereof, is arranged below the conveyer belt or below the one strand of the conveyer belt (10), and has a width which is shaped, based on the conveyer belt, so that it extends this side and that side of the bar (15).

8. Device according to claim 7 or 1, wherein the bar (15) is designed as a central bar, so that an essentially same-width belt section of the conveyer belt (10) remains on this side and that side, in particular on the left and on the right of the bar.

9. Device according to claim 1, wherein a guiding-together region (4, 5) is provided following the sensor and discharge device (17, 16, 19, 18; 3) for guiding-together of the several rows (R1, R2) of closures and for forming a row of closures following one another closely.

10. A Process for conveying closures made from metal sheet (D) in an essentially vertical direction from a collecting point (1) to a release point (6), wherein the closures are selected to be in correct position during conveying in order to release at the release point (6) same-lying closures in a row of closures following one another closely, wherein

(a) more than one row (R1, R2) of closures next to one another are supplied to a sensor and discharge device (17, 16, 19, 18; 3) **on the same** conveyer belt (10);

and/or

(b) wrong-position closures are **discharged on both sides** at the sensor and discharge device (17, 16, 19, 18; 3);

and/or

(c) after the sensor and discharge device (17, 16, 19, 18; 3) the several separate rows (R1, R2) are guided together in a guiding-together section (4, 5) by a **resiliently flexible guide member (60, 66)** into the row of closures following one another closely.

11. Process according to claim 10, wherein the closures are supplied to the sensor and discharge device (3) on separate tracks, but the same conveyer belt (10), however track separation is removed after this device.

12. Process according to claim 10, wherein a magnetic device (51; 55, 56, 57) running at an angle with respect to a central plane (100) of the conveyer belt (10) is arranged between sensor and discharge device and the release point (6), and the correct-position rows of closure lids are guided together (55, 56) on the same conveyer belt (10).

13. Process according to claim 12, wherein the angle of inclination or the inclination of the magnetic device is adjusted with respect to the central plane, to adjust to various lid sizes.

14. Process according to claim 10, wherein **two** rows of closures are supplied to the sensor and discharge device (3) on **one** conveyer belt (10), but separated by a bar (15) of defined length.

15. Device according to claim 1, wherein a guide member (60), which has a nose section (61) which points in the direction of the sensor and discharge device, is arranged pivotably at a distance from the sensor and discharge device (3).

16. Device according to claim 15, wherein the guide member has an essentially triangular, elongated shape and the pivotable bearing or an axis of the bearing is arranged at an acute angle of the guide member, opposite the nose section and close to the discharge (6).

17. Device according to claim 15 or 16, wherein the guide member has a guide side edge (62), which starts from the nose section and is inclined with respect to a longitudinal plane of the conveyer belt (10), for the definition of a feed hopper for the closures between the guide side edge and a guide strip (70, 71) at the edge of the conveyer belt (10).

18. Device according to claim 17, wherein the guide strip (70, 71) can be adjusted for adaptation of a width of the feed hopper to different diameters of closure lids.

19. Device according to claim 15, wherein the guide member (60) is supported (66) in resiliently flexible manner and the supporting force increases if the guide member is deflected from a belt central plane.

20. Device according to claim 15, wherein the guide member (60) has two limiting stops (65, 64a, 64b) for its pivoting movement to establish a maximum pivoting angle.

21. Device according to claim 20, wherein the maximum pivoting angle lies between 10°and 30°, in particular between essentially 12° and 20°.

22. Device according to claim 15 or claim 17, wherein the guide member (60) has a curve-shaped arched edge (63) as deflecting section, which is directed laterally outwards starting from the nose section, for deflecting closure lids away from the feed hopper.

23. Device according to claim 1, wherein the end of the bar (15) lies in the region of the sensor and discharge device, in particular after the discharge device (16, 18) of the sensor and discharge device.

24. Device according to claim 1, wherein an elongated magnetic device (51, 55, 56, 57) inclined with respect to a central plane (100) of the conveyer belt (10) is arranged **after** the sensor and discharge device (3), for guiding together of the more than one row of closures after discharging the wrong-position closures.

25. Device according to claim 24, wherein the position of the second elongated magnetic device (51) can be changed with respect to the central plane of the belt and/or has a width which is lower than the width of the first magnetic device (50), which is arranged upstream of the sensor and discharge device below the conveyer belt (10).

26. Device according to claim 6, wherein at least two sensors (17, 19) of the sensor and discharge device (17, 16, 19, 18; 3) are arranged to be height-adjustable at the bar (15) and the bar is arranged to be fixed in its position with respect to a surface of the conveyer belt (10).

27. Device according to claim 24 or claim 7, wherein at least one elongated magnetic device (50, 51) below the surface of the conveyer belt (10) consists of individual magnets (55a, 55b; 56a, 56b; 57a, 57b; 58a, 58b; 59a, 59b) run together **at a particular distance** and which are arranged in an elongated support (54, 53).

28. Device according to claim 27, wherein the elongated magnetic device (51) is arranged in a guiding-together region (4) and the "inclined elongated magnetic device" consists of the plurality of individual magnets arranged run together at a distance, inclined to the central plane of the conveyer belt.

29. Device according to claim 27, wherein several sections of the row of individual magnets have several different inclinations in order to achieve guiding-together of adjacent rows to one row at the release point (6).

30. Device according to claim 27, wherein two rows (58, 59) of individual magnets lying next to one another are arranged upstream of a guiding-together region (4) below the conveyer belt (10) so that they are placed on both sides of the bar (15).

31. Device according to claim 27 or 28, wherein the elongated magnetic device is arranged at a distance (e) from the conveyer belt and this distance can be adjusted (40) in order to have a change in the magnetic force of attraction on the closure lids.

32. Device according to claim 7, wherein the elongated magnetic device (50) is followed by a connection magnetic device (51) in order to achieve continuous conveying of closure lids.

33. Device according to claim 7, wherein the elongated magnetic device (50) does not leave too great a gap to a connection magnetic device (51) in order to achieve continuous conveying of closure lids.

34. Device according to claim 32, wherein the connection magnetic device (51) is significantly narrower, preferably essentially half as wide as the preceding magnetic device (50).

35. Process according to claim 10, wherein a pressure force is exerted on the guide member (60) – which is pivotable particularly at a bearing (60a) facing away from the sensor and discharge device (3) in order to facilitate a reaction force via a spring device (66).

36. Process according to claim 35, wherein during an increase in pressure force either on a nose section (61) or an inner guide edge (62) of the resiliently flexible guide member (60, 66), the guide member is deflected in order to change the mouth width of a feed hopper and to loosen closures which are possibly blocking at the inlet.

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37. A device for conveying closures made from metallic sheet (D) in an essentially vertical direction from a collecting point (1) to a release point (6), wherein correct-position closures are selected during conveying in order to release at the release point (6) only same-lying closures in a row of closures following one another closely;

(i) having a conveyer belt (10) for the transport (v1, v2) of the closures and a sensor and discharge device (17, 16, 19, 18; 3) for detecting wrong-position closures and for lateral discharge (q1, q2) of individual wrong-position closures; wherein

(ii) in the course of the conveyer belt (10) to the sensor and discharge device (17, 16, 19, 18; 3), a separating device (15) is arranged above the conveyer belt;

- in order supply more than one row (R1, R2) of closures next to one another to the sensor and discharge device (17,16,19,18;3); and/or
- to guide together several rows (R1, R2) of closures into the row of closures following one another closely after the sensor and discharge device (17, 16, 19, 18; 3);

alternatively

(iii) wrong-position closures can be discharged at both sides of the conveyer belt at the sensor and discharge device (17, 16, 19, 18; 3).

38. Device according to claim 37, wherein laterally projecting guide strips (30, 31) are provided on both sides of the discharge device (16, 18) in order to conduct the rejection of closures and to convert the lateral discharge movement into a downward movement.

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